FISHERIES MANAGEMENT PLAN

for

Mountain Lakes in the Slough Creek Drainage

Montana

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Introduction

Absaroka-Beartooth Wilderness Lakes

The Absaroka-Beartooth Wilderness Area (A-B) established in 1978 encompasses 930,584 acres and contains more area over 10,000 feet in elevation than any other area in the U.S. It rates as one of the top four or five wilderness areas in the country, receiving about 320,000 visitor-days of use each year. For comparison, the Bob Marshall Wilderness area receives about 150,000 visitor-days use yearly. The Absarokee Beartooth Wilderness Area and lands immediately adjacent contain 948 high mountain lakes, 318 of which contain fish and 630 that are barren. Approximately 204 of these lakes have self-sustaining fisheries and 114 are stocked. Stocking schedules vary from early in some of the more heavily used areas to once every six to ten years in the lakes managed for trophy fisheries.

Pat Marcuson, during the time he worked for the Montana Department of Fish, Wildlife and Parks (MDFWP) out of Red Lodge, gathered a tremendous amount of information on the A-B lakes and created a massive data base. In 1980 he developed fisheries management plans for each major drainage. Since that time, a computer data base containing the latest information on the lakes with fisheries has also been developed. This data base is located at the MDFWP Regional Headquarters in Billings. Additional information about individual lakes can be obtained from that office.

The purpose of this document is to update the 1980 lake management plan with the latest fisheries information available for the mountain lakes in the Slough Creek Drainage.

Methods

Mountain lake information is collected primarily by a lake survey team consisting of two temporary employees who spend about eight weeks backpacking into the remote lakes of the A-B mountains. Lakes scheduled for sampling are selected based on length of time since last survey, questions about the status of fish introductions, impending scheduled fish plants, and angler reports. Fish populations are monitored with lightweight experimental nylon gill nets, hook and line, and visual surveys. Additional information gathered includes lake access, pH, air and surface water temperatures, availability of firewood and campsites, and extent of recreation use. Observations are also made of aquatic invertebrates, cruising and rising fish, fish fry, and suitability of substrate for spawning. Inlet and outlet streams are visually surveyed for fish and spawning activity or potential.

Fish collected are weighted and measured, and scales are taken for later age determination. Live fish are released, dead fish are dissected to check for parasites and general health and condition; stomachs are examined for food organisms.

Spot creel checks are conducted by enforcement and fisheries personnel to determine catch rates and angler satisfaction with regulations. Additional angler use information was gathered during 1988 and 1989 with a voluntary trailhead creel information survey implemented at the major access points to the A-B wilderness area. The purpose of this survey was to address a proposed new three-fish limit, estimate harvest and catch rates, solicit public comments, and gather additional fisheries information. Supplemental fisheries information is also obtained from guides and outfitters, Wilderness Rangers and other Forest Service personnel, as well as reports from other Wilderness users.

Information gathered from all sources is summarized and analyzed to make fish management decisions for the mountain lakes. Regulations are adjusted as necessary to help achieve desired fish population levels. Stocking rates and individual lake management strategies are adjusted as necessary to maintain desired angler catch rates, fish growth rates, and species distribution. Summarized information is used to update the computer data base for each mountain lake sampled.

DESCRIPTION

Location and number of lakes

Slough Creek has a drainage area of 104.8 square miles in the Gardiner Ranger District of the Gallatin National Forest. The drainage (Figure 1) is bordered by Yellowstone National Park to the south and is entirely within the Absaroka-Beartooth Wilderness Area of Montana. There are 14 mountain lakes in the drainage, 9 of which are in Park County and 5 in Sweet Grass County. The entire drainage is within the Absaroka Mountain Range. The lakes are part of three subdrainages: Lake Abundance, Rock Creek and Wounded Man Creek. Slough Creek flows into the Lamar River in Yellowstone National Park.

Lake areas and depths

The 14 lakes in the drainage cover 57.5 surface acres (0.09% of the total land in the drainage) and range from 0.6 to 17.2 acres (Table 1). Lake Abundance is the largest and deepest at 37 feet. Twelve of the lakes are less than 15 feet deep, and one has 19 feet of water.

Lake Elevations

The overall elevation of the lakes in Slough Creek drainage is lower than those in six other drainage areas in the study area. Pinnacle Lake occupies the highest altitude of 9,725 feet. Eleven lakes are located in the 9,000-foot range, and three occur between 8,000 to 9,000 feet.

Accessibility

Lake Abundance is nearly accessible by all-wheel-drive vehicle travel through Daisy Pass. Trails serve ten lakes and three others are within easy walking distance from trails. Horses can be taken to the shores of all but two lakes.

Water chemistry

According to surveys in the 1970's, Lake Abundance had the highest chemical values except for iron content (Table 2). The mean pH for the drainage was 6.3. Conductivities ranged from 14 to 154 mhos for the eight lakes sampled. Lake Abundance was the most conductive. The lake had slightly higher conductivities in deeper waters with dense aquatic plant growth.

Slough Creek Drainage map.

Table 1. Summary of locations, physical features and fisheries information for lakes in the Slough Creek Drainage of the Absaroka Mountain Range.

Location code [1]	Name of lake	County [2]	Forest [3]	Elevation in feet	Area in acres	Maximum depth in feet	Shoal (% of lake less than 15 ft. deep)	Ecological zone [4]	Fish Spcies [5]	Fish population type [6]	Fish management [7]
	LAKE ABUNDANCE CREEK										
1	Lake Abundance	49	G	8,400	17.2	37	37	2	CT	3	2
	ROCK CREEK										
2	Horseshoe	49	G	9,180	5.0	13	100	3	CT	2	2
3a	Rock Creek (4)	49	G	9,530	1.1	6	100	3	B		3
b				9,550	.3	1	100	3	B		3
c				9,548	.6	3	100	3	B		3
d				9,544	.1	1	100	3	B		3
	WOUNDED MAN CREEK										
4	Trail	49	G	9,310	3.2	6	100	3	B		3
5	Peace (2)	49	G	8,725	4.8	4	100	2	CT	1	1
				8,732	.9	3	100	2	B		3
6	Heather	40	G	9,275	4.4	4	100	3	CT	1	1
7	Unnamed	40	G	9,625	9.1	6	100	3	B		3
8	Unnamed	40	G	9,525	5.1	19	62	3	B		1
9	Unnamed	40	G	9,375	2.2	2	100	3	B		3
10	Pinnacle	40	G	9,725	3.3	3	100	3	B		3

[1] See Figure 1 for locations.
[2] 40 = Sweet Grass County; 49 = Park County.
[3] G = Gallatin National Forest.
[4] 2 = Canadian; 3 = Subalpine.
[5] CT = Cutthroat trout; B = Barren of fish.
[6] 1 = Self-sustaining; 2 = Stocked; 3 = Self-sustaining and stocked.
[7] 1 = No immediate management necessary; 2 = Stock at intervals; 3 = No fisheries potential

Table 2. Chemical attributes of lakes in the Slough Creek Drainage of the Absaroka Mountain Range

Location code [1]	Name of Lake	pH	Conductivity (mhos)	Alkalinity (ppm)	Total hardness (ppm)	Silica (ppm)	Iron (ppm)	Total phosphate (P) (no units)
1	Lake Abundance	6.5	154	45	50	3.5	0	.30
2	Horseshoe	6.2	31	25	20	.7	.05	0
3a	Rock Creek	6.3	14	10	10	.7	.05	0
3c		6.3	19	15	10	.6	0	0
4	Trail	6.3	72	25	20	.6	0	.20
5	Peace	6.3	25	25	10	2.2	.10	.10
6	Heather	6.3	21	15	10	1.3	0	.10
7	Unnamed	6.3	19	15	10	1.4	.10	0
8	Unnamed	6.3	31	25	10	2.1	.10	.15

[1] See Figure 1 for locations.

Thermal

Random samples of summer water temperatures suggest that the warmest waters occur in early September. Some of the smallest bodies of water reached 66° F. Waters with fish or fisheries potential had maximum readings of 54° F. The ice-free period, documented over a 3-year period, averaged 130 days for all lakes and ranged from 112 to 168 days.

Water clarity

The limits of visibility were usually to the bottom of most of the shallow lakes in this drainage. None of these waters are subject to glacial silts common to most lakes at high altitudes. Spring runoffs were also clear. Visibilities were somewhat reduced in Horseshoe Lake due to large volumes of Daphnia pulex and Diaptomus tyrelli, and in Lake Abundance because of aquatic vegetation.

Plankton

Over half of the numbers of zooplankton were represented by the three large forms: Diaptomus shoshone, Daphnia middendorffiana and Daphnia pulex (Table 3). These forms were abundant in fishless lakes as well as those with fish.

Fisheries

Four lakes had populations of Cutthroat Trout (Table 1). Peace and Heather lakes have indigenous stocks, the only fisheries of this type found in the entire Absaroka-Beartooth study area. Cutthroat Trout have been observed in the small streams near the base of Pinnacle Mountain (Vern Waples, pers. com.).

Lake Abundance was chemically treated on September 5, 1969 with rotenone and restocked in 1970 with Cutthroat Trout from McBride Lake in Yellowstone Park. Lake Abundance had large numbers of lake chub and small Cutthroat Trout prior to rehabilitation. The lake needs periodic stocking to provide a reasonable sport fishery. Horseshoe Lake was stocked with Cutthroat Trout of the McBride variety in 1976. No reproduction is anticipated form these fish.

The remaining ten lakes are fishless. Only one of these lakes has adequate depths and physical features capable of supporting a fishery.

Stocking histories of lakes planted by the State of Montana, Department of Fish and Game are listed in Table 4. Several sources reported that the Cutthroat Trout population in Lake Abundance prior to rehabilitation had been there for many years. According to the Henderson Diary, the original Cutthroat Trout may have been indigenous.

Table 3. Plankton samples from lakes in the Slough Creek Drainage of the Absaroka Mountain Range.

Location code [1]	Name of lake	Sample date	Volume of plankton cc/m^3	Number/m^3 of zooplankton	Number/m^3 of large zooplankton	Species of large zooplankton
1	Lake Abundance	04/10/76	7.2	251	90	D. pulex
		04/10/76	18.0	359		
		09/10/77	3.6	1,544	1,364	D. pulex
2	Horseshoe	09/07/77	13.0	6,047	5,106	D. pulex
		09/18/79	15.4	5,488	4,692	D. pulex
3a	Rock Creek	09/07/77	4.9	776	58	D. shoshone
4	Trail	09/07/77	1.9	94	94	D. shoshone
5	Peace	09/07/77	9.9	126	90	D. pulex
6	Heather	09/08/77	3.3	22		
7	Unnamed	09/08/77	4.6	775	86	D. shoshone
					287	D. middendorffiana
8	Unnamed	09/08/77	3.8	144	144	D. shoshone

[1] See Figure 1 for locations.

Table 4. Fish planted by the State of Montana in lakes in Slough Creek Drainage of the Absaroka Mountain Range.

Location Code [1]	Name of Lake	Species and strain [2]	Number planted	Number/acre	Date stocked	Next stocking	Stock frequency
1	Lake Abundance	CT'M	1,000	58	08/13/90	1993	3 yr
		CT'M	1,000	58	08/18/84		
		CT'M	1,000	58	08/17/77		
		CT'M	15,200	884	08/16/72		
		CT'M	5,002	291	07/15/70		
		CT'M	24,300	1,413	09/11/47		
		CT'M	10,000	581	09/03/42		
		CT'M	21,000	1,221	08/23/39		
		CT'M	33,792	1,965	08/30/38		
2	Horseshoe Lake	CT'M	900	180	08/18/84	1992	8 yr
		CT'M	1,300	260	09/10/76	1992	8 yr
5	Peace	Indigenous CT'Y					
6	Heather	Indigenous CT'Y					

[1] See Figure 1 for locations.
[2] CT'Y = Yellowstone cutthroat trout; CT'M = McBride cutthroat.

During 1988 and 1989 (Poore & Frazer 1990), a voluntary trailhead creel information survey was implemented at the major access points to the Absaroka-Beartooth Wilderness Area (A-B). That study showed, in spite of liberal fish limits for the A-B mountains, anglers kept only 26% of their catch in 1988 and 27% in 1989. Anglers release three out of four fish they presently catch without being required to by restrictive regulations. By a four to one majority, those fishermen responding to the survey wanted to see the present liberal fish limits retained in the A-B.

A-B anglers kept 35% of the Brook Trout they caught, 24% of the Rainbows and 22% of Cutthroat. The average catch per hour for each fish species was; 0.94 for Cutthroat Trout, 0.72 for Rainbow Trout, and 1.27 for Brook Trout. Catch rates for 1988 and 1989 were identical with 2.6 fish per hour on lakes, 4.3 fish per hour on streams, and 2.4 fish per hour for people fishing both lakes and streams.

More detailed information and maps for each lake located in the Slough Creek drainage are included in the appendix at the end of this report.

MANAGEMENT RECOMMENDATIONS FOR LAKES IN SLOUGH CREEK DRAINAGE

Tables 5 and 6 summarize the management recommendations for lakes in the Slough Creek system. The Horseshoe Lake plant may be phased out if the fishery does not receive use. Until the word is out about the lake's fishing opportunities, it will probably remain unused. Isolation from other fishable waters makes its discovery unlikely without guidance from public agencies.

The two unique fisheries at Heather and Peace lakes should be maintained and included under protective status. The Unnamed Lake (#8) with fisheries potential should remain barren to minimize any fisheries contamination to Cutthroat Trout of special concern in Slough Creek (Marcuson 1976).

Implementation of more restrictive regulations throughout the entire A-B Wilderness at this time is not warranted because: 1) Use is restricted by difficult access and the large number of lakes containing fisheries. Maintained trails lead to less than half the lakes with fish. 2) Many A-B lakes need more harvest because they contain overabundant populations of Brook Trout and (in some lakes) Yellowstone Cutthroat. 3) Unlike most wilderness lakes many A-B lakes are uniquely fertile and productive. Even with liberal limits, optimum harvest has not been reached. 4) Our trailhead creel survey indicates people are regulating their own harvest and prefer this to being required to follow unnecessarily stringent regulations.

Several areas along major trails (especially where horses are allowed) are showing signs of overuse and may require some type of special management. Most A-B wilderness users, however, are satisfied with present management and the resource is in excellent shape.

Table 5. Species distribution, average length, population status and latest survey date for lakes located in the Slough Creek Drainage of the Absaroka Mountain Range.

Location code [1]	Name of lake	Fish species [2]	Average catch/net	Average length	Sustaining population	Stocked population	Survey date
1	Lake Abundance	CT'M	6	15.3		X	08/15/89
2	Horseshoe	CT'M	0	0		X	08/16/89
5	Peace	CT'Y	24	9.0	X		08/16/89
6	Heather	CT'Y	21	11.3	X		09/16/72

[1] See Figure 1 for locations.
[2] CT'M = McBride cutthroat trout; CT'Y = Yellowstone cutthroat trout.

Table 6. Fish stocking proposed for lakes in the Slough Creek Drainage of the Absaroka Mountains.

Location code [1]	Name of lake	Next stocking year	Stocking frequency	Fish species [2]	Number of fish	Number of fish/acre
1	Lake Abundance	1993	3	CT'M	1,000	58
2	Horseshoe	1992	8	CT'M	900	180

[1] See Figure 1 for locations.
[2] CT'M = McBride cutthroat trout.

REFERENCES

Marcuson, P.E. and C.G. Bishop. 1970. Inventory of waters of the Project Area. D-J Job Prog. Report F-20-R-14, MT Department of Fish and Game, 12 pp.

_____. 1974. Inventory of waters of the Project Area. D-J Job Prog. Report F-20-R-17 & 18, MT Department of Fish and Game, 11 pp.

_____. 1975. Inventory of waters of the project area. D-J Job Prog. Report F-20-R-19, MT Department of Fish and Game, 21 pp.

Marcuson, P. E. 1976. Wilderness Area Fisheries. Trans. Amer. Fish. Soc. Spec. Pub. Management of Wilderness Area Waters, 23 pp.

Poore, M.D. and K. Frazer. South Central Montana Coldwater Fisheries Investigations. D-J Job Progress Report F-46-R-3, MT Department of Fish Wildlife and Parks, Job V-b, 32 pp.

APPENDIX
INDIVIDUAL LAKE REPORTS

1. LAKE ABUNDANCE T8S, R14E, S. 32

Park County 8,400 feet

Lake Abundance is located about 8 jeep miles northwest of Cooke City, Montana, just inside the Absaroka-Beartooth Wilderness Area. The outlet, Abundance Creek, flows 6 miles downvalley to Slough Creek. The lake has 17.2 surface acres with a maximum depth of 37 feet and a mean depth of 15 feet (Marcuson and Bishop 1970). Two overnight gill nets set in July 1969 captured three Cutthroat Trout and lake chubs were captured with dip nets and by hook and line. The lake was poisoned with Pro-Nox-Fish (Rotenone) on September 5, 1969. Lake chubs were numerous and no large trout were observed. Both the inlet and outlet appeared suitable to limited spawning. Five fish, 7.5 and 9.5 inches, were aged to 3 years old; three fish, 10.2 to 10.5 inches, were found to be 4 years old.

The lake was restocked July 7, 1970 with 5,002 Cutthroat Trout from the McBride origin. The fish were 6 inches when stocked. On August 16, 1972 the lake was planted with 15,200 Cutthroat Trout 2 inches in length. Because of multiple plants and the size ranges of these fish. it was not appropriate to evaluate the growth of unmarked known-age fish. Good growth did occur from these fish. The largest fish sampled was 3.5 pounds in 1976 which was assumed to be a 6-year-old trout from the 1970 plant.

Fish are reproducing and are adding small numbers of trout to the population. Fishermen deplete the population to a greater extent than reproduction replaces the harvest. To maintain a decent harvest, the lake must be periodically restocked.

The lake has excellent winter food, but suffers from severe oxygen depletion by late winter. Overstocking could promote winterkill. More research is needed to establish the best fisheries management. Until more is learned, I would recommend stocking 1,000 fish every 3 years. Lake Abundance also has some winter fishing pressure.

Area	17.2 acres	748,800 $ft.^2$
Volume	255 AF	11,107,800 $ft.^3$
Maximum length		1,800 ft.
Maximum depth		37 ft.
Mean depth		15 ft.
Maximum width		660 ft.
Mean width		416 ft.
Shoreline length		4,680 ft.
S. d.		1.5 ft.

2. HORSESHOE LAKE T8S, R13E, S. 10, 15

Park County 9,180 feet

Horseshoe Lake is in Horseshoe Basin, an area where exploratory mining occurred in 1916 and 1926-30. The area was accessible by four-wheel-drive vehicles from Independence (prior to Wilderness status). It is also accessible by a trail from Wounded Man Creek, a tributary to Slough Creek. There is an old deteriorating earth dam approximately 30 feet long, 10 feet high and impounds 4 feet of water. The dam was created by miners who operated a hydraulic sluiceway for exposing gold. Signs of old mining activities such as roads, garbage, machinery, oil cans, shovels, old stoves, etc. are common to the immediate area. the lake covers 5.0 surface acres.

No fish were known to live in the lake prior to August 10, 1976. The small divided inlets are not likely to provide spawning area. Horseshoe Lake has a dense population of large zooplankton (Table 3) which provides an excellent food source during 230 days of ice cover. A sample of stomach contents from 12 Cutthroat Trout captured in 1977 showed dominant utilization of Daphnia pulex and minor consumption of tricopterians and other food items during early September.

The fish averaged 8.7 inches and ranged from 8.2 to 9.3 inches, exceptional growth for yearling fish. This lake could maintain an exceptional fishery if it was stocked with 900 fish every 8 years. In September 1979, the 3-year-old fish average 14.8 inches and 1.25 pounds. The outlet dam is showing accelerated deterioration and should be reinforced with rock fill to maintain the needed depth. The project could be completed by hand with a crew of workers.

Area	5.0 acres
Maximum length	644 feet
Maximum depth	13 feet
Shoreline length	1,786 feet
Mean width	328 feet
S.d.	1.1

3. ROCK CREEK LAKES (4) T8S, R13E, S. 12

Park County 9,530 & 9,550 feet

These lakes are located approximately 1½ miles east of Horseshoe Mountain on the divide between Rock and Wounded Man creeks, both tributaries of Slough Creek. All the lakes are small and shallow with no fish or fish potential. The surrounding area is mostly alpine grass and is recovering from the past effects of sheep grazing. One of the lakes drains into Wounded Man Creek and three lakes drain into Rock Creek. Lakes 2, 3 and 4 (see

hydrographic maps) are not shown on Forest Service maps, thus exact locations are not described for each of these puddles.

	1	2	3	4
Areas	47,526	12,357	26,931	2,535 feet^2
Areas	1.1	.28	.62	.06 acres
Maximum lengths	285	125	356	.89 feet
Maximum depths	8	1	3	1 feet
Mean widths	167	99	76	28 feet
Shoreline lengths	837	356	837	231 feet
S.d.	1.1	1.1	1.4	1.3

4. TRAIL LAKE T8S, R13E, S. 11

Park County 9,310 feet

Trail Lake is on a bench just northeast of Horseshoe Mountain. An old exploratory mining road is visible to the southwest on Horseshoe Mountain. The lake is accessible by trail from Wounded Man Creek or from Horseshoe Mountain. It is a scenic lake, but has no fish (Marcuson an Bishop 1974). The outlet could possibly provide for some limited spawning, but shallowness and lack of a permanent inlet make it doubtful if fish would survive. No fish management is recommended.

Area	141,134.4 feet^2
Area	3.2 acres
Maximum length	574 feet
Maximum depth	6 feet
Shoreline length	1,624 feet
S.d.	1.2

5. PEACE LAKES (2) T8S, R13E, S. 1 & 2

Park County 8,725 & 8,730 feet

These small lakes head up Wounded Man Creek, a tributary to Slough Creek. they are both shallow with 4 feet of maximum depth (Marcuson and Bishop 1974). Fish were noted in the larger Widewater Lake and Wounded Man Creek. The outlet and inlets of the 4.8-acre lake should provide excellent spawning area. A trail from Lake of the Woods and up Wounded Man Creek traverses the larger lake. An old prospector's or sheepherder's camp is located on the south shore. Domestic sheep have been grazed on the alpine grass nearby. The area will probably be used to a greater extent by elk and moose when grasses recover from the detrimental effects of sheep use. The lakes have a population of small-sized Cutthroat Trout. Four fish averaged 6.8 inches and 0.12 pounds. The sample of fish was sent to Dr. Wallace, University of Idaho, who verified indigenous

characteristics of the Cutthroat Trout. These fish are one of two fisheries that are indigenous to the area's lakes. The other aboriginal fishery is at Heather Lake nearby. No other lakes are known to have indigenous fish in the Absaroka-Beartooth Study Area. No management, other than protective status is recommended.

Elevations	8,725	8,730 feet
Areas	206,965	39,335 feet^2
Areas	4.75	.90 acres
Maximum Length	836	344 feet
Maximum depth	4	3 feet
Mean width	248	114 feet
Shoreline length	2,362	886 feet
S.d.	1.47	1.26

6. HEATHER LAKE T7S, R13E, S. 35 (SE¼)

Sweet Grass County 9,275 feet

This shallow 4.4-acre lake is located in the Slough Creek drainage of the Absaroka Mountain Range (Marcuson and Bishop 1975). Maximum depth was 4 feet but the lake has numerous springs and a beautiful inlet and outlet which provide spawning and winter water for fish. At the time of survey, this was the only lake other than Lake Abundance and Peace Lake in the drainage with a fishery. Numerous fish 1 inch long were collected, but no key was sufficient to verify the species. Cutthroat Trout were suspected because the outlet has a passable gradient to allow fish from Wounded Man Creek to move upstream. An old trail up Wounded Man Creek was probably established by miners from the Horseshoe Basin area.

On August 12, 1974 one overnight gill net was set and 21 native Cutthroat Trout were captured. They averaged 11.2 inches and 0.53 pounds. They ranged from 7.8 to 14.8 inches. A sample was sent to Dr. Wallace, University of Idaho, for examination. These fish had large spots with spots on the operculum and proved to be aborigines. No management other than protective status is recommended.

Area	4.4 acres
Maximum depth	4 feet
Maximum length	670 feet
Mean width	284 feet
Shoreline length	1,734 feet
S.d.	1.1

7. UNNAMED LAKE T17S, R13E, S. 35 (SW¼)

Sweet Grass County 9,625 feet

This lake is benched on the plateau between Wounded Man Creek and the South Fork of Wounded Man Creek (Stillwater drainage). The lake's outlet (no name) flows into Wounded Man Creek, then Slough Creek. Mining claims exist on the east shoreline and the lake's substrate as well as the outlet has considerable iron precipitate. The lake is fed by temporary inlets; however, one was still flowing in September. The lake has no fish and appears to have little potential as a fishery. No fishery management is recommended.

Area	9.1 acres
Maximum depth	6 feet
Maximum length	2,939 feet
Mean width	348 feet
Shoreline length	2,939 feet
S.d.	1.3

8. UNNAMED LAKE T7S, R13E, S. 34

Sweet Grass County 9,525 feet

This lake is pocketed among large talus slopes and rock walls to the north and a sparsely timbered knoll to the south. The outlet has no name and drains into Wounded Man Creek, a tributary to Slough Creek. No trails led to the lake, but it is accessible by cross country travel from all directions. The outlet could provide 400 to 500 feet of spawning area; none appears available in inlet streams. No fish occupy the lake, nor should any be planted, due to native Cutthroat Trout in Wounded Man Creek. The lake could possibly support fish. No camps or use by people were evident prior to publication of this report. No fish management is proposed.

Area	5.1 acres
Maximum depth	840 feet
Maximum length	19 feet
Mean width	270 feet
Shoreline length	2,432.5 feet
S.d.	1.4

9. UNNAMED LAKE T7S, R13E, S. 33

Sweet Grass County 9,375 feet

This small, shallow lake is on Wounded Man Creek. The lake is partially accessible by trail up Wounded Man Creek, then without trail via small tributary drainage. Horses could be ridden to the lake by carefully picking out a route. The lake is in a cirque valley at timberline. No fish exist, nor is there any potential (Marcuson and Bishop 1975). The only management plans are to protect it and the watershed from detrimental exploitation and from artificial stocking of fish.

Area	2.17 acres
Maximum depth	2 feet
Maximum length	693 feet
Mean width	136 feet
Shoreline length	2,013 feet
S.d.	1.4

10. PINNACLE LAKE T7S, R13E, S. 28

Sweet Grass County 9,725 feet

Pinnacle Lake lies just west of Pinnacle Mountain in a small alpine glacial cirque. It is not accessible by trail; however, horses might pick a way to the lake. Fuel is available downstream from the lake. No fish are in Wounded Man and Slough creeks (Marcuson and Bishop 1975). This area should be protected from exploitation to protect this unique watershed.

Area	3.3 acres
Maximum depth	3 feet
Maximum length	660 feet
Mean width	222 feet
Shoreline length	1,838 feet
S.d.	1.4